



## PERFORMANCE MANAGEMENT TOOLS

In order to deliver on the 2006 site closure commitments and actions described in this plan, sound performance management systems are essential. Project oversight and contract management must be streamlined and efficient; funds management must be focused on the primary and secondary critical paths that drive the cleanup schedule; and key resource allocations and assignments must be project focused. Effective and aggressive overhead management philosophies must remain in place throughout the duration of the closure scope, in order to direct the maximum amount of funds towards safe and meaningful field cleanup.

This section of the Performance Management Plan outlines the performance management systems, processes, and tools that will permit the Fernald team to continue to track, trend, and react to project performance issues and needs from now until site completion. The section also identifies the risk management system that has been put in place to identify and mitigate technical and schedule risks associated with Fernald's closure baseline.

### Performance Management Philosophy

The performance management tools that the Fernald team has put in place are all tailored to the site's detailed resource-loaded baseline, which is composed of 2,207 discrete work activities. Each of these activities is integrated within the site's master closure schedule.

All work activities have been planned and estimated in accordance with DOE Order 413.3 requirements and levels of detail. The new baseline is a site completion baseline, with detailed planning through 2007 and beyond (including post-site completion and long term site stewardship activities); it provides the site with the level of planning detail that is necessary for this complex project.

The site's suite of performance management tools has also been customized to meet the specific needs of DOE's new performance-based closure contract, awarded to Fluor Fernald in November 2000.

The new closure contract incentivizes Fluor Fernald to deliver a safe, accelerated site closure with performance fees tied directly to specific cost and schedule milestones. As a result of this new closure contract, the site has assembled all of the needed systems to track earned value, report on specific cost and schedule variances, and allocate funds consistent with DOE's new performance-based contracting objectives and strategy.

The Fernald team's performance management philosophy within the new closure contract structure is straightforward – negotiate closure-specific performance criteria in the areas of safety, cost, and schedule as part of the closure contract (completed for Fernald in November 2000), and incentivize the closure contractor to meet the agreed to performance criteria through an innovative fee structure that contains provisional and end-of-job fee payments.

Under this structure, the contractor has the flexibility to develop the systems necessary to track performance against the agreed-to milestones and make the necessary resource adjustments as required by each subproject.

The philosophy also permits the team to select among several execution approaches (e.g., self-performance, construction management, fixed-price subcontracting, outsourcing) to achieve the intended results for each subproject area. The performance management systems are then tailored to match the needs of the selected execution approach as required.

In this way, the Fernald team has developed – over the past two years – all of the necessary systems to track and respond to performance indices, metrics, and trends in a near “real time” mode, meeting the demands of a performance-based contracting environment. All of Fernald's performance indices and metrics are linked to the longer term goals established by the 2006 closure baseline schedule, rather than short-term artificial goals that may or may not have direct relevance to accelerated closure.



### Management Systems Description

Fernald's Project Controls System (PCS) is the centerpiece of the performance management tool kit. The PCS is an interactive system that allows the Fernald team to perform needs assessments, manage resources, and evaluate the impact of proposed changes on a real time basis. It also promotes work efficiency by providing the means to manage project inter-relationships, resource demands, and complex day-to-day project logistics. The PCS interfaces directly with the site's accounting system, and serves as the engine behind the variety of internal and external reports required by the project.

The objectives behind the PCS are to assure that all project work is identified, planned, monitored, and managed. These objectives are focused towards the establishment of a "good business practice" approach in setting forth those management processes required to manage project work. These processes include:

- Defining and organizing the technical work scope
- Identifying and estimating resource requirements
- Establishing budgets
- Authorizing work
- Accumulating cost and schedule performance data
- Managing funds
- Reporting progress and forecasts to management.

The effectiveness of the Fernald PCS has been demonstrated, and the system is compliant with all applicable DOE Orders and Directives.

### Work Breakdown Structure

Fernald's major remedial subprojects are organized within a work breakdown structure (WBS) that provides a hierarchical framework of subproject objectives and elements. Development of the WBS is the first major step in the work definition process.

A summary of the cost elements, technical content, work statement, as well as any notable exclusions for each WBS element are documented in the WBS dictionary maintained in PCS Forms. Detailed work scope descriptions at the control account and work package levels can be found in the closure plan basis of estimate (narratives). These are living documents, subject to change through the change control process, and are used throughout the life of the project.

As a hierarchical framework that logically subdivides the entire project, the WBS accomplishes the following:

- Describes the work to be accomplished and the manner in which it is planned
- Provides a logical summarization of similar work
- Facilitates the planning process by subdividing the work into logical elements that can then be scheduled
- Facilitates the planning process by subdividing the work into increments that can be readily estimated
- Facilitates the planning process by subdividing the work into logical elements that can be budgeted
- Facilitates the planning process by subdividing the work into logical elements such that earned value or performance can be measured
- Provides the framework for cost collection during the period of work performance
- Provides the framework for the assignment of responsibility at the organization level at which the work will be accomplished
- Provides summary levels of cost, schedule, and performance information for management review and reporting
- Provides for the integration of work scope, resource requirements, cost, schedule, performing organization, and responsibility assignment
- Provides the basis for future change control activity.

### Project Performance Measurement

The objective of generating performance measurement data is to provide information for the project/program managers to use in determining subproject status. The process includes accumulating and recording actual costs and commitments, determining and accumulating schedule status and forecast data, and determining and accumulating progress (earned value) data. The data is compiled in the performance measurement and reporting system to generate statistical and forecast reports comparing actual performance to planned performance and actual performance to actual costs. This data supplements the project/program managers' "hands-on" awareness of status with cost, schedule, and technical performance indicators contained in performance measurement reports.



Analysis of technical, schedule, and cost performance data is required on a monthly basis to interpret the current condition, verify expected completion dates, and forecast costs. The purpose and intent of performance analysis encompasses the three objectives below:

- Determining the current condition and status of the subproject, comparing current scope, schedule, and cost performance with planned performance
- Finding the root cause of problems and developing corrective action plans before problems escalate
- Forecasting expected completion costs and dates.

Earned value is the objective assessment of how much planned work was accomplished. It is the periodic, consistent, and objective measured quantity of completed work in terms of the quantity planned for that work.

Performance data is accumulated in an automated system, the performance measurement and reporting system. The data accumulation process integrates cost and schedule planning to produce earned value, estimate to complete, schedule status, and forecast. The performance measurement and reporting system database contains all schedules, budgets, estimate to complete, actual costs, and earned value data within the PCS.

Schedule status information consists of data which track progress of completing activities and/or milestones contained in the site master schedule.

### **Contractual Reporting**

Project data is compiled monthly for use in the following contractual reports:

- Cost Performance Report
- Schedules/Milestones
- Estimate to Complete
- Integrated Planning, Accountability, and Budgeting System Report
- Quarterly Critical Analysis Report.

***Cost Performance Report*** – This report summarizes the current period, cumulative, and at completion status at the project baseline summary (PBS) levels and totaled at the site level as well as at the major WBS element. This report is supported by a variance analysis report containing a problem analysis, task/project impact, and corrective action sections to address variances exceeding agreed upon thresholds.

***Schedules/Milestones*** – Monthly schedules submitted are the level 2 site critical activities, level 3B bar per charge number, and level 6 statused critical path activities. Milestone information is sorted by PBS and date, sorted by date, and sorted by milestone levels.

***Estimate to Complete*** – Information pertaining to funds management is supplied in the following formats and submitted on a monthly basis: funds requirement spreadsheets; funds utilization spreadsheets; and estimate at completion spreadsheets summarized at the PBS level.

***Integrated Planning, Accountability, and Budgeting System Report*** – The project data developed for the cost performance report is also incorporated into DOE's Integrated Planning, Accountability, and Budgeting System for reporting on the following project status items:

- Financial status
- Milestone status
- Cost status and variance explanations
- Schedule status and variance explanations.

***Quarterly Critical Analysis Report*** – A quarterly critical analysis is also held every quarter of the contract term to support determination of the quarterly provisional fee by the DOE Contracting Officer. The analysis touches on the following subjects: safety performance; compliance performance; cost performance; schedule performance; funding; risk-based contingency utilization; and key metrics. The results of the analysis are compiled into the Quarterly Critical Analysis Report.

### **Change Control**

Significant changes in plans create the flowdown change implementation requirement to revise the documents and files defining Fernald's baseline. These include scope of work, narratives, schedules, estimates, budgets, work authorization documents, and files. The PCS change control process is intended to assure the timely, disciplined, and controlled incorporation of changes approved by Fernald's change control board into the baseline.

The work scope contained in the baseline database is the life cycle plan by fiscal year. Changes that will impact the baseline due to work scope, schedule, budget, and funding changes will be documented through a formal change proposal that will be implemented upon approval.



## Risk Management

The Fernald team is committed to the most aggressive cost case achievable. Accordingly, the funding requests contained in this document do not include contingency. This, along with the contract's incentive-based structure, motivates the Fernald team to minimize cost and schedule growth due to risk.

While this results in a very aggressive cost management approach, it does introduce schedule risk. The Fernald team's optimization opportunities reduce this schedule risk by focusing on accelerating those project activities that have higher risks of schedule delays. This is the thrust of the opportunities the team has identified, to put additional available funding to work in the most productive ways possible. The Fernald team is poised to implement these optimization activities in the event funding is made available through further efficiency or additional appropriations.

A detailed implementation risk management approach has been developed and approved for the Fernald site, to address and manage the cost or schedule risk of a 2006 execution plan. The risk management approach is a disciplined means to identify, analyze, and quantify the various internal and external risks to achieving the project baseline, and assists in determining if the risks identified are avoidable and/or manageable.

As an integral part of the closure baseline development process, the project/program managers, in conjunction with support organization representatives and subject matter experts, conducted evaluation of all discrete and "level-of-effort" work activities. The teams identified, quantified, and established the probability of occurrence of all potential risks to their respective control accounts and recorded the results on risk/opportunity identification and analysis forms.

Next, a risk estimate is developed using the data from the risk/opportunity identification and analysis forms and Crystal Ball simulation software. The following data from the risk/opportunity identification and analysis form is used as input parameters for the Crystal Ball simulation model:

- Minimum \$: total baseline dollars
- Likeliest \$: total baseline dollars + probable cost
- Maximum \$: total baseline dollars + impact cost.

A schedule risk simulation was then conducted using Primavera's Monte Carlo routine to forecast schedule risk which can then be incorporated into the cost risk analysis. The statistical analysis is performed at various confidence levels; for risk planning purposes, a risk estimate at the 50% statistical confidence level is utilized by the Fernald team. The risk estimate is then used to establish the risk-based contingency for the Fernald site.

Risk-based contingency is controlled at the program level and made available for transfer to the subprojects/programs to cover incurred risks that are internally driven. The risk-based contingency at the 50% confidence level is coupled with Fernald's baseline to establish the contract budget base to be allocated and managed as described in the risk management approach. In addition, the data has been provided at the 80% confidence level for the DOE contingency above the contract budget base to establish the total project cost.

Consistent with the risk management approach, following finalization of the contract budget base, Fernald has developed a list of those residual risk elements that are critical to the successful closure of the site. Detailed contingency plans are currently being developed for each critical risk based on the criteria outlined in the risk management approach. The critical risk contingency plans are scheduled for completion in August 2002. This will provide the project/program teams with a defined course of action that can be rapidly implemented in the event a known risk is incurred. Finally, the combined risk management plan (risk analysis, risk estimate, and contingency plans) will be reviewed and updated quarterly.



## Contract Management

DOE-OH has a mission of accelerated completion of the Fernald Environmental Management Project. The Fernald closure contract is intended to support that mission and achieve accelerated site goals. The intent is to accelerate “site completion” which includes building demolition, waste disposal, soil cleanup, disposal facility operations, final dismantlement and disposal of the Silo treatment facilities, residual soil removal and final site restoration. In order to obtain these results, fee tied to cost and schedule performance is utilized to provide Fluor Fernald significant monetary incentives.

Fluor Fernald can potentially earn up to \$288 million in incentive fee or 12% of the minimum target cost on the contract. Contract fee is earned in two distinct ways, through cost incentive (maximum \$235 million) and schedule incentive (maximum \$53 million). Figure 7 illustrates the cost and schedule curves that have been negotiated as part of the November 2000 Fernald Closure Contract. Fluor Fernald has overall contractual responsibility for the remediation, restoration, and closure of the site.

The contract is a cost-plus-incentive fee completion contract (excluding transition) that also includes schedule driven performance incentives.

In order to receive incentive fees, Fluor Fernald must also meet minimum requirements. If minimum requirements are not met, the Contracting Officer may unilaterally deduct fee in the following four areas: environment, safety, and health; catastrophic event; specified level of performance; and cost performance.

The target cost and fee are:

- Minimum target cost: \$2.4 billion
- Maximum target cost: \$2.6 billion
- Target fee: \$120 million.

To earn the maximum cost fee of \$235 million, total cost cannot exceed \$1.825 billion. To earn the minimum cost fee of \$63 million, total cost would equate to \$2.885 billion. To earn the maximum schedule fee of \$53 million, the project must be completed by December 31, 2006.

The minimum and maximum target costs were negotiated pre-award between the contracting parties. The minimum target cost is used as the fee base and the maximum target cost is used in the contract value calculation.

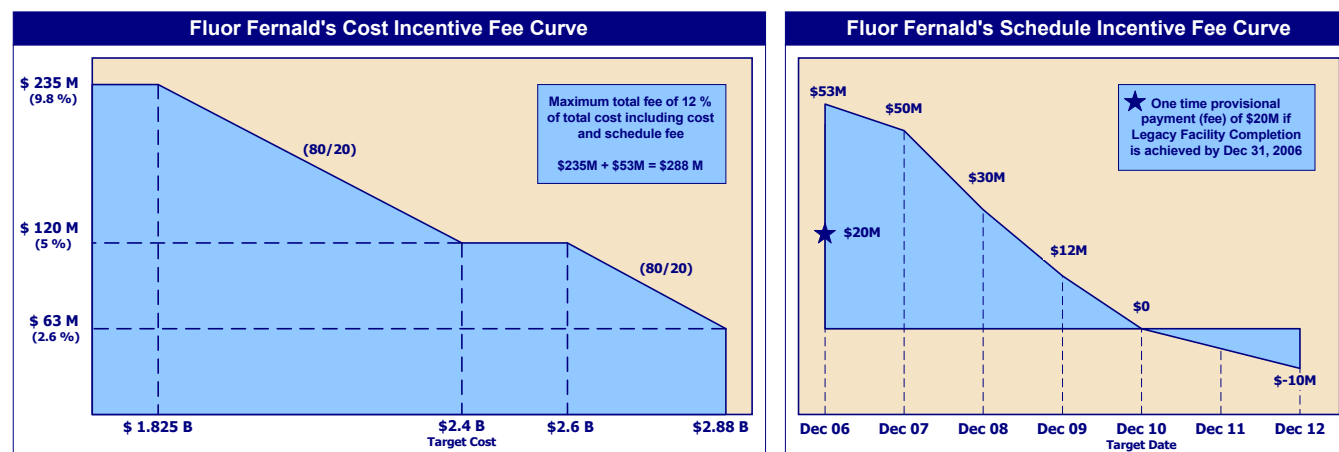


Figure 7: The cost and schedule incentives in the Fernald Closure Contract are clearly linked to project acceleration.